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## Dear Friends of Agriculture in the Classroom

Dorothy Jackson  
National Program Leader  
*Agriculture in the Classroom*

Happy Spring! This issue of *Agriculture in the Classroom Notes Newsletter* focuses attention on the **Millennium Green** project. This project, which will continue through 2001, is part of the White House Millennium Council, which is encouraging every American to plant a tree or garden in the new millennium. Millennium Green offers ways to include Agriculture in the Classroom in new initiatives and gain additional materials and opportunities.

We hope your **Ag Day** celebrations were successful. The national celebration included 35 honor students from District of Columbia public schools, and representatives of government, business, and communities. Deputy Secretary of Agriculture, Richard Rominger announced a new USDA initiative, the "Rural Community Schools Rebuilding Program." The initiative will provide rural schools with access to as much as \$1.2 billion in financing to repair school buildings, acquire new equipment, develop course materials, and train teachers. Rominger also reemphasized in his presentation USDA's ongoing commitment to excellence in education, and recognized the accomplishments of Agriculture in the Classroom in promoting agricultural literacy. Let's keep up the good work!

## Helping Bridge the Digital Divide in D.C. Schools

Students in grades Kindergarten-12th grades, and teachers in the District of Columbia public school system are being coached on using the Internet to improve classroom teaching, learning, and career development. Organized and led by CSREES' Economic and Community Systems (ECS), and Agriculture in the Classroom, USDA employees are providing hands-on experiences with Internet Technology in cooperation with D.C. Agriculture in the Classroom Coordinator Barbara Evans.

Public/private partnerships with USDA have resulted in Internet-based learning materials becoming available world-wide for use in increasing agricultural literacy by teachers and students. One teacher summed it up by saying, "Since my inner city students have been involved in Agriculture in the Classroom, they won't stop talking about how they want to be veterinarians." Tom Tate (ECS), volunteer Internet instructor for D.C. teachers, said, "This is very rewarding. We are growing hope and community as much as we are teaching technology and agriculture. It is very exciting to help others cross the 'digital divide'." For more information on the digital divide, visit the following website: [www.ace.org](http://www.ace.org).

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## About Millennium Green

*Millennium Green Council*

Cities and communities are losing trees, forests, and open green spaces as never before due to rapid and often poorly planned development. Millennium Green celebrates environmental literacy and action at the local community and neighborhood level. We all need to understand and value the important contributions that trees, forests, and green spaces make to our daily lives.

Millennium Green is a National project of the White House Millennium Council led by the Department of Agriculture in partnership with the Environmental Protection Agency, Department of Energy, Department of Transportation, Department of Interior, Department of Education, and Department of Justice. The project also includes private organizations, companies, and individuals from all across the Nation.

Millennium Green goals are: For every person to plant and/or adopt a tree or a garden for the new millennium; for every community to identify and protect a heritage tree, grove, or natural wonder or treasure of special significance for the new millennium. For every business or corporation to plant and/or adopt a tree or garden, or protect a natural resource wonder or treasure for the new millennium on behalf of every employee or client—working through national, State, and local non-profit tree planting, garden, and conservation groups.

Working in our back yards and in our communities, we can each do our part to nurture and care for these precious resources. Trees, forests, and green spaces filter polluted runoff, making our water safer and cleaner. Trees clean the air of carbon dioxide and harmful particles and return oxygen, helping us all to breathe easier.

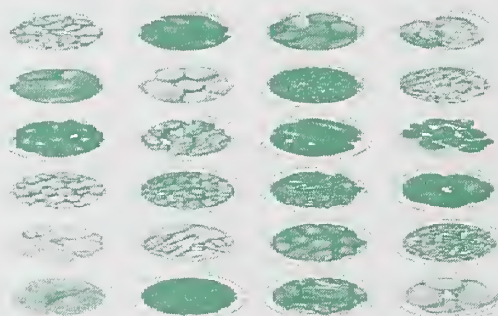
Trees help pay our "carbon debt" by absorbing carbon dioxide, a greenhouse gas, slowing global climate change. Trees, forests, and green spaces shelter and nourish wildlife from bears to bald eagles, and salmon to salamanders. Trees and green space save us money, reducing the cost of controlling storm-water and naturally cooling overheated cities and homes in the summer.

Every tree, grove, garden or green space we plant and care for makes a difference. There is no better time than the new millennium to become involved and set the stewardship example for generations to come.

## Free Seeds for School Millennium Gardens

*America the Beautiful*

Now that the new millennium is well underway, "America the Beautiful Fund" has \$1,000,000 worth of free vegetable and flower seeds available to school and volunteer groups to plant a Millennium Garden as a part of the Millennium Green project.



Schools across the country have found that planting a garden is a great educational experience for all age groups. School gardens are making a difference:

- Students at Palmetto Elementary School in South Miami, Florida, have planted a teaching garden at their school where they learn about food production and marketing by running their own farmer's market;
- At the High School for Environmental Studies in New York City, students have planted a rooftop garden where they grow fresh greens and specialty crops to sell to Manhattan restaurants; and
- The Farm to School Education Program in Hartford, Connecticut uses "America the Beautiful Fund" seeds to grow fresh produce at nearby Halcomb Farm, for school lunches and to teach children about nutrition, the environment, and social and economic aspects of food production.

If you would like to receive a grant of free seeds for an Agriculture in the Classroom project, the application may be found on the Internet at [www.america-the-beautiful.org](http://www.america-the-beautiful.org), or send a self-addressed stamped envelope to "America the Beautiful Fund," 1730 K Street, N.W., Suite 1902, Washington, D.C. 20006.



## Earth Day

In celebration of Earth Day, April 22, 2000, thousands of communities around the world will host a wide variety of events. In the United States, the flagship event will be a huge gathering on the Mall in Washington, D.C., directly across the street from the U.S. Department of Agriculture. One of the nation's most popular celebrities, actor Leonardo DiCaprio, will serve as chairman for the Mall event.

American agriculture has a powerful story to tell of conservation and environmental success, and its efforts to promote agricultural literacy while continuing to provide the world with an abundant, reliable, and affordable supply of high quality food, natural fiber and other agricultural products. The **Ag-Earth** partnership is working to raise public awareness about its responsible stewardship efforts and strong commitment to meeting future environmental and educational challenges.

A stage powered by renewable energy will feature additional international entertainment and top musical acts from the U.S. Along with the entertainment, Earth Day Network will host EarthFair 2000 on the Mall—hundreds of exhibits (including USDA) displaying all the elements of a sustainable society. Sun, wind, earth, water, and people will be powering exhibits, modeling central components of a clean energy future.

Each of the energy technology "pavilions" will feature hands-on activities, many for children, and opportunities for direct action. EarthFair 2000 will also recycle its trash, use clean alternative energy, and demonstrate other ways to have a sustainable event as well as a sustainable world. Visitors will be provided with examples of how to make a difference in their home, schools, at work, and in their everyday lives.

There will be thousands of other events, from coast to coast and around the world. Big Earth Day events are planned for cities including London, New York, Tokyo, Los Angeles, Seoul, Chicago, Beijing, Atlanta, Tel Aviv, Boston, Manila and San Diego. In all, half a billion people around the world will participate in Earth Day 2000.

If you need information regarding EarthFair2000, contact: Earth Day Network 2000, 91 Marion Street, Seattle, WA 98104; fax: (206) 682-1184; email: [earthday@earthday.net](mailto:earthday@earthday.net).

*"This is an excellent opportunity to highlight the natural partnership between agriculture and the environment. Farmers and ranchers are the first stewards of the land, and work hard to conserve natural resources to provide the bountiful supply of food which Americans have come to take for granted."*—Congressman Charles W. Stenholm, Earth Day 1999.

## National Arbor Day

National Arbor Day Foundation

The National Millennium Arbor Day Ceremony will be held on April 29, 2000, at the John and Mable Ringling Museum in Sarasota, Florida. The ceremony will include a free event called **"Tree Fair 2000."** The **Tree Fair 2000** has many activities for both adults and children. The highlight of this event will be the commemorative planting of the National Arbor Day Tree with Secretary of Agriculture Dan Glickman and the Millennium Tree Trail Dedication. The National Arbor Day Foundation will present a special Tree City USA award to a city in each of the 50 States, plus Puerto Rico.

The first 2000 visitors into the celebration will receive a coupon for a free tree. There will be a variety of trees to select from, and coupons can be redeemed before leaving the event.

Some of the events designed for children are *Tree Jeopardy*—youths will be challenged to answer questions relating to trees and their natural environment. This is a friendly competition which tests the knowledge of participants in the field of environmental science. There will be a *Children's Tree Planting* event with Nickelodeon Studios and a Special White House Guest. Also, the *4-H Tent* will offer many activities during the day. For additional information on this the National Celebration, visit the following website:  
[www.millenniumarborday.org](http://www.millenniumarborday.org).

**National Arbor Day** is the last Friday in April, but many States observe Arbor Day on different dates according to their best tree-planting times. Visit The National Arbor Day Foundation at:  
[www.arborday.org/arborday/arbordayDates.html](http://www.arborday.org/arborday/arbordayDates.html) to find out when your State or Territory observes Arbor Day and look for ways to include Agriculture in the Classroom in the festivities. Also listed is each State's official State tree. You may visit their homepage for other interesting information on Arbor Day, including contest opportunities, student activities, and much more!

## Educational Resources and Activities

### SunWise School Program

Environmental Protection Agency

**Discipline:** Science, Health, Physical Education

**Concepts:** Creative Thinking, Data Collection, Reading, Problem Solving

**Agricultural Focus:** Environmental Science

**Grade Levels:** K-8

SunWise is a flexible health and environmental education program that complements current education practices by using existing curricula and learning standards. Participating K-8 classrooms can sponsor activities that raise children's awareness of Ultra Violet (UV) radiation and its health effects, through cross-curricular lessons, reporting of the UV Index and UV ground data through an interactive Internet learning site, infrastructure enhancement (e.g., policy changes or shade structures), community partnerships, school-wide sun-safety activities, a sun-safety video, and more.

Children spend lots of time outdoors during recess, physical education classes, after-school activities, and sports programs. While exposure to sunlight is enjoyable and healthy, too much can be dangerous. Over exposure to ultraviolet (UV) radiation can cause adverse health effects, including skin cancer and other skin disorders, eye damage and cataracts, and immune system suppression. Currently, one in five Americans develop skin cancer during their lifetime and 58 percent of blindness worldwide is a result of cataracts. Children are particularly at risk since most of the average person's lifetime sun exposure occurs before age 18.

The SunWise School Program pilot test began in May 1999 (Phase I) and will continue throughout the 1999-2000 school year (Phase II). National implementation is targeted for the 2000-2001 school year. The SunWise Program materials are currently in draft form and will be refined and updated through the pilot period. All SunWise program materials are available free of charge.

Becoming a SunWise Partner School is easy! Any K-6 classroom in the United States may participate in the SunWise School Program. A single classroom, multiple classrooms, a school, or an entire school district may join. Middle schools are also welcome to join the pilot program.

For copies of the document, which includes information about SunWise, the UV Index, action steps for sun protection, and more, please contact EPA's National Service Center for Environmental Publications at 1-800-490-9198. You may also obtain a copy of the recently published full-color brochure called "Sun Safety for Kids: The SunWise School Program," EPA document number 430-F-00-003. For more information, visit website: [www.epa.gov/sunwise](http://www.epa.gov/sunwise).

### A Kid's Journey to Understanding Weeds

Roy Reichenbach

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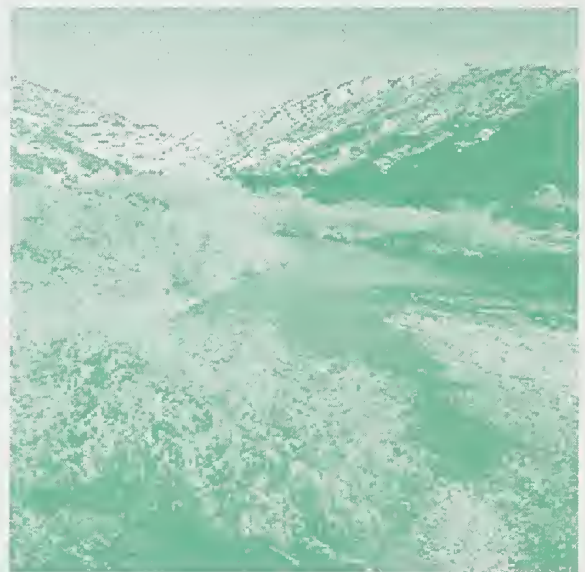
**Discipline:** Science

**Concepts:** Identification

**Agricultural Focus:** Noxious Weeds, Ecosystems

**Grade Levels:** 3-12

Are plants really harmful? What are their impacts? Whom do they harm? These are important questions which need to be answered in order to allow us to understand invasive plants and develop ways to protect our world.



Invasive non-native plants and animals are causing major economic and biological diversity problems not only in the U.S. but, also around the world. In July 1996, the United Nations Conference on Alien Species identified invasive species as a serious threat to global biological diversity. A recent estimate calculated the annual economic impact of biological invasions as \$122 billion, primarily caused by losses in agricultural lands,



forests, rangelands, and fisheries. Nearly one-third of this amount is due to non-native invasive plants. A U.S. Presidential Invasive Species Executive Order was signed in 1998 calling for the establishment of a national management plan. Many Federal and State agencies are making additional initiatives to prevent and manage invasive species.

The invasion of pristine areas such as national parks and other ecosystems has been well documented. Mismanagement or disturbance in an ecosystem is not necessary to get invasive plants to invade and completely occupy a piece of land, but it can accelerate the process. Many invasive plants have characteristics including: deep spreading roots and/or rhizomes, profuse seed production, and no natural enemies such as diseases and insects, therefore, making them extremely competitive in a new ecosystem.

In natural areas, invasive plants can crowd out native plants, forming monocultures of the non-native species. This reduces plant biological diversity and plant community structure diversity. There are no short, medium and tall plants to attract a variety of birds, mammals, and insects (reduced animal diversity); to protect the soil from rain or reduce wind and water erosion (lost soil, soil nutrients, and fertility); to maintain a good root structure (shallow, medium and deep roots) to hold soil in place; the plants are all the same height and the roots are the same depth.

Invasive non-native plants can change water cycles in lakes and streams or in the soil, causing increases or decreases in soil moisture and water tables, dry lakes or streams, reduced flooding or increased flooding. They can also change fire intervals and intensities, soil chemistry and structure, and other characteristics that influence the numbers and types of plants and animals that live in natural resource areas. Usually the changes that occur are quite beneficial to the non-native species, but unfavorable to the native plants.

Non-native invasive plants reduce the number of plant types and the total number of plants fed upon by wildlife, which ultimately reduces herbivore numbers. When herbivore numbers are reduced, their predators become less numerous. The entire plant/animal system is out of balance in infested areas.

In addition to the impacts on the plants and animals, people within the ecosystem can be impacted in many ways. Hotel and restaurant owners and nature guides, who rely on tourists

spending money to watch birds, photograph wild flowers, hunt game, or fish; see reduced revenues when invasive species take over ecosystems. This in turn hurts the banks, grocery stores, etc., and the community suffers. Ranchers and farmers are also hurt and have the same impacts on the community.

These are just a few of the adverse influences attributed to invasive weeds, which are reflected in the \$122 billion economic impacts mentioned earlier in this article. The *Kid's Journey to Understanding Weeds Program* can help explain what invasive species are, how they affect the ecosystem and how that can influence us in our daily lives.

The education activity portion of the *Kid's Journey to Understanding Weeds* project consists of a video, classroom activities, and a CD ROM program. The classroom activities teach students about the harmful effects of ten invasive weeds, while increasing students' awareness of the sensitive balance of natural ecosystems.

Even if you don't have an outdoor classroom, students can still learn about the effects of invasive weeds on habitat, productive lands, and healthy waterways. To receive a copy of the video and other educational activities, please write or fax: *Kid's Journey to Understanding Weeds* Project, 417 E. Fremont, Laramie, Wyoming 82072-3143, Fax: 307-745-8733 or write to George F. Hittle, Project Coordinator, IAF, or P.O. Box 1901, Cheyenne, Wyoming 82003.

For more information about this program, contact Roy Reichenbach, Wyoming Department of Agriculture, 307-777-6585 or [rreich@state.wy.us](mailto:rreich@state.wy.us). Articles on invasive weeds can also be found at the following website: [www.ars.usda.gov/is/AR](http://www.ars.usda.gov/is/AR).

**Pioneering Agricultural Literacy  
Agriculture in the Classroom  
National Conference  
Salt Lake City, Utah  
June 14-17, 2000  
[www.agclassroom.org](http://www.agclassroom.org)**

Following are two classroom activities that include background information about some invasive weeds.

# Multiflora Rose

**BACKGROUND INFORMATION:** Native to Asia, Multiflora Rose was brought to the United States from Japan in the 1880's by horticulturists (someone who works with ornamental plants). Wildlife managers planted it for wildlife food and cover, thinking it was a good plant. Multiflora rose is a perennial, thorny shrub of medium height. Its trailing stems can root at the tip, forming dense thickets which can choke out native plant species. These thickets can act as living fences, impenetrable by man or large animals. The leaves are compound and alternate along the stem, each leaf has 5-11 leaflets and the edges of the leaflets are toothed. Multiflora rose blooms in late spring having pretty clusters of white flowers. As in other rose species fruits are small, red hips that are eaten by many bird species in the winter. This invasive weed is adaptable to a wide range of environments but is not found in standing water or extremely dry habitats.

**Student Activity:** The activity below will help you discover some ways seeds are moved away from the parent plant. Suppose all the seeds made by a parent plant fell straight down. How well do you think new plants would grow under the parent plant? Seeds would grow a lot better out away from the parent plant because there would not be as much competition for food, water, sunlight, and space.

## Scattering Seeds

Many plants make fruits and seeds that help get the seeds away from the parent plant. However, not all plants need to scatter their seeds, grass for example, grows best close together. Some plants don't need seeds at all; they grow from a part or fragment of the parent plant and some even grow from a tiny cell called a spore. Wind scatters some seeds, some seeds float and some seeds are moved by animals. See if you can match the seed to the way it is moved.

\_\_\_\_\_ This seed has tiny threads that look almost like a parachute.

\_\_\_\_\_ This brightly colored fruit has tiny seeds and is juicy and sweet, it looks delicious to birds, and other animals.

\_\_\_\_\_ This large seed is too heavy to float in air but is hollow and can float in water.

\_\_\_\_\_ This seed has many burrs so it can hitchhike a ride from animals, people or vehicles.

1.  Cocklebur

2.  Coconut

3.  Dandelion Seed

4.  Strawberry

Remember you can also spread seeds by picking plants and carrying them to another area. This is how many invasive weeds get started in a new area.





# Japanese Climbing Fern

**BACKGROUND INFORMATION:** Japanese Climbing Fern was introduced from Asia and can grow just about anywhere. It thrives in shade, sunlight, where it is wet and marshy or dry and brittle. It forms such a dense tangled mass that it blocks out light to other plants. Even when killed the dead vines hang from the trees and completely cover forest floors. It changes the flow of streams and increases the threat of wild fire by providing fuel ladders to the tree tops. Thousands of acres of small vegetation and mature trees are suffocated each year by this invasive weed.

What looks like a stem is actually a climbing leaf which may become 100 feet long! Ferns do not have showy flowers or seeds but do have small reproductive parts called spores. The spores are formed underneath the leaves. Japanese Climbing Fern spreads as far as the wind will carry its minute spores which act as "airborne reproductive devices". Each spore can grow into another weed.

## Student Activity:

Everyone has seen flowers and seeds but what about spores??

This activity will introduce you to spores.

### Materials needed:

- 1 mushroom
- 1 plastic knife or dull pair of scissors
- 1 piece of paper

### Instructions

1. Your teacher will give you a mushroom, plastic knife or scissors and a piece of paper.
2. Put your name(s) on the paper.
3. Carefully pull the stem out of the mushroom.
4. Carefully cut the bottom layer off of the mushroom cap exposing the gills  
(brown - gray part of the inside of the mushroom).
5. Place the mushroom cap upright and gills down next to the paper.
6. Put it in an undisturbed area for a few days then check under the mushroom.
7. You should see spores that have fallen out of the mushroom onto the paper.  
The spores will be in patterns that represent the gills if the paper and mushroom were left undisturbed.

**How are the Japanese Climbing Fern and mushrooms alike?**

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